

**COMMONWEALTH OF VIRGINIA**  
**Department of Environmental Quality**  
**West Central Regional Office**  
**STATEMENT OF LEGAL AND FACTUAL BASIS**

Columbia Gas Transmission Corp.  
Botetourt County, Virginia  
Permit No. VA-20157

Title V of the 1990 Clean Air Act Amendments required each state to develop a permit program to ensure that certain facilities have federal Air Pollution Operating Permits, called Title V Operating Permits. As required by 40 CFR Part 70 and 9 VAC 5 Chapter 80, Columbia Gas Transmission Corp. has applied to renew the Title V Operating Permit for its Botetourt County facility. The Department has reviewed the application and has prepared a draft Title V Operating Permit.

Engineer/Permit Contact: \_\_\_\_\_ Date: May 17, 2004

Air Permit Manager: \_\_\_\_\_ Date: \_\_\_\_\_

## **FACILITY INFORMATION**

### **Permittee**

Columbia Gas Transmission Corp.  
P.O. Box 1273  
Charleston, West Virginia 25325-1273

### **Facility**

Columbia Gas Transmission Corp.  
State Road 220  
Botetourt County, Virginia

AIRS ID No. 51-023-0009

## **SOURCE DESCRIPTION**

SIC Code: 4922 - Natural gas is received via gas pipelines from an upstream compressor station, compressed using three (3) natural gas fired reciprocating engines, (one rated at 2,650 hp and the remaining two each rated at 1,100 hp), and pumped into outlet pipelines for transmission to a downstream station. The facility has the potential to emit approximately 110 tons per year of carbon monoxide, and is therefore considered a major source. Emissions of all other criteria pollutants are less than 100 tons per year for each criteria pollutant. Individual HAP emissions are less than 10 tons per year per pollutant and combined HAP emissions are less than 25 tons per year.

Other auxiliary equipment at the facility includes two natural gas-fired boilers rated at 1.95 and 0.85 MMBtu/hr, two natural gas-fired heaters rated at 2.0 and 0.45 MMBtu/hr, a 221 hp reciprocating engine-emergency generator fueled by natural gas, a 25 hp natural gas fired air compressor and storage tanks. Fugitive VOC emissions due to equipment leaks and blowdowns are estimated to be approximately 1.6 tpy for 1996, and potentially as much as 5 tpy.

The two White-Superior 8GTLA engines, units 01203 and 01204 each rated at 1,100 hp, were permitted on May 2, 1983. The engines are fueled by pipeline quality natural gas. The engines originally had no fuel throughput limit or limit on hours of operation and could potentially be operated 8760 hours per year. In order to allow the facility to demonstrate compliance for this equipment, a fuel throughput limit of 71 MMscf per engine was established in the May 19, 1999 Title V Operating Permit based on the emission limit calculations in the engineering analysis for the 1983 permit.

The Auxiliary Generator, unit 012G1, was permitted on Sept. 23, 1993 and is rated at 221 hp. Operating limitations include 1,000 hours or less of operation per year, or 1.695 MMscf or less of

pipeline quality natural gas throughput per year. Records of operating hours or fuel throughput required by the existing permit shall serve to demonstrate compliance with the emission limits.

The Superior 16SGTB, unit 01205 was originally permitted on March 18, 1997, the permit was modified on March 11, 1999 to increase the formaldehyde emission limit. It is rated at 2,650 hp. Fuel throughput is limited to 212 MMscf. Compliance with emission limits shall be adequately demonstrated by maintaining records of fuel throughput. The 1999 permit was amended on July 2, 2001 to create a state-only section for toxics - this state-only section is being carried over into this Title V permit.

The facility is a Title V major source of carbon monoxide. This source is located in an attainment area for all pollutants except NO<sub>x</sub> and VOC for which Botetourt County has been designated a control area for these two pollutants. The facility has three current state permits to construct and operate as follows:

<u>Permit Date</u>	<u>Equipment</u>
• April 22, 1983	two White-Superior Reciprocating Engine/Compressor
• September 23, 1993	one Waukesha Reciprocating Engine/Generator
• March 11, 1999 and Amended July 2, 2001	one Superior Reciprocating Engine/Compressor

### COMPLIANCE STATUS

A full compliance evaluation of this facility, including a site visit, has been conducted. In addition, all reports and other data required by permit conditions or regulations, which are submitted to DEQ, are evaluated for compliance. Based on these compliance evaluations, the facility is in compliance. The last on-site inspection was conducted on December 27, 2002 to observe stack opacity.

### EMISSION UNIT AND CONTROL DEVICE IDENTIFICATION

The emissions units at this facility consist of the following:

Emission Unit ID	Stack ID	Emission Unit Description	Size/Rated Capacity*	Pollution Control	Applicable Permit Date
01203	E03	White-Superior 8GTLA Reciprocating Engine/Compressor; installed 1983	1,100 hp 10.2 MMBtu/hr	n/a	April 22, 1983
01204	E04	White-Superior 8GTLA Reciprocating Engine/Compressor; installed 1983	1,100 hp 10.2 MMBtu/hr	n/a	April 22, 1983
01205	E05	Superior 16SGTB Reciprocating Engine/Compressor; installed 1997	2,650 hp 24.5 MMBtu/hr	n/a	July 2, 2001
012G1	G1	Waukesha F11GSI Reciprocating Engine/Generator; installed 1993	221 hp 2.6 MMBtu/hr	n/a	Sept. 23, 1993

## EMISSIONS INVENTORY

A copy of the 2002 annual emission update is attached. Emissions are summarized in the following tables.

2002 Actual Emissions

	2002 Criteria Pollutant Emission in Tons/Year				
	VOC	CO	SO <sub>2</sub>	PM <sub>10</sub>	NO <sub>x</sub>
Total	15.47	37.15	0.06	2.39	31.01

2002 Facility Hazardous Air Pollutant Emissions

Pollutant	2002 Hazardous Air Pollutant Emission in Tons/Yr
Formaldehyde	4.54

## EMISSION UNIT APPLICABLE REQUIREMENTS

### Limitations

The following Virginia Administrative Codes that have specific emission requirements have been determined to be applicable:

#### White-Superior Reciprocating Engines/Compressors:

- Emissions from each White-Superior Reciprocating Engine/Compressor will be maintained by using engine speed as a control variable that automatically adjusts the air/fuel ratio and ignition system. A change in the mode of operation may require a permit to modify and operate.
- The approved fuel for each White-Superior Reciprocating Engine/Compressor is natural gas. A change in fuel may require a permit to modify and operate.
- Each White-Superior Reciprocating Engine/Compressor shall consume no more than 71 MMscf of natural gas per year, calculated monthly as the sum of each consecutive twelve (12) month period.
- Emissions from each White-Superior Reciprocating Engine/Compressor shall not exceed the limits specified below:

Nitrogen Oxides (as NO <sub>2</sub> )	4.4 lbs/hr	19.1 tons/yr
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Volatile Organic Compounds	3.7 lbs/hr	15.9 tons/yr
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- Visible Emissions from each White-Superior Reciprocating Engine/Compressor stack shall not exceed 20 percent opacity as determined by EPA Method 9 (reference 40 CFR 60, Appendix A).

Superior 16SGTB Reciprocating Engine/Compressor

- Nitrogen oxide and volatile organic compound emissions from the Superior 16SGTB Reciprocating Engine/Compressor shall be controlled by low-emissions combustion using Clean-Burn technology.
- The approved fuel for the Superior 16SGTB Reciprocating Engine/Compressor is natural gas. A change in fuel may require a permit to modify and operate.
- The Superior 16SGTB Reciprocating Engine/Compressor shall consume no more than 212 MMscf of natural gas per year, calculated monthly as the sum of each consecutive twelve (12) month period.
- Emissions from the operation of the Superior 16SGTB Reciprocating Engine/Compressor shall not exceed the limits specified below:

Particulate Matter	0.8 lbs/hr	3.1 tons/yr
PM-10	0.8 lbs/hr	3.1 tons/yr
Nitrogen Oxides (as NO <sub>2</sub> )	10.1 lbs/hr	38.4 tons/yr
Carbon Monoxide	10.8 lbs/hr	40.9 tons/yr
Volatile Organic Compounds	4.0 lbs/hr	15.4 tons/yr

- Visible Emissions from the Superior 16SGTB Reciprocating Engine/Compressor stack shall not exceed 5 percent opacity except for one six-minute period in any one hour of not more than 10 percent opacity as determined by EPA Method 9 (reference 40 CFR 60, Appendix A).

Waukesha Reciprocating Engine/Generator

- The approved mode of operation for the Waukesha Reciprocating Engine/Generator is normal (best economy). A change in the mode of operation may require a permit to modify and operate.
- The approved fuel for the Waukesha Reciprocating Engine/Generator is natural gas. A change in fuel may require a permit to modify and operate.
- The Waukesha Reciprocating Engine/Generator shall not operate more than 1,000 hours per year.
- The Waukesha Reciprocating Engine/Generator shall consume no more than 1.695MMscf of natural gas per year, calculated monthly as the sum of each consecutive twelve- (12) month period.
- Emissions from the operation of the Waukesha Reciprocating Engine/Generator shall not exceed the limits specified below:

Nitrogen Oxides	6.9 lbs/MMBtu	14.0 lbs/hr	7.0 tons/yr
(as NO <sub>2</sub> )			
- Visible Emissions from the Waukesha Reciprocating Engine/Generator stack shall not exceed 5 percent opacity as determined by EPA Method 9 (reference 40 CFR 60, Appendix A).

**Monitoring and Recordkeeping**

The monitoring and recordkeeping requirements are as follows:

White-Superior Reciprocating Engines/Compressors:

- The permittee shall take the following measures in order to minimize the duration and frequency of excess emissions, with respect to each White-Superior Reciprocating Engine/Compressor:
  - Develop a maintenance schedule and maintain records of all scheduled and non-scheduled maintenance for the reciprocating engines/compressors.
  - Have available written operating procedures for the White-Superior Reciprocating Engines/Compressors. These procedures shall be based on the manufacturer's recommendations, at a minimum, if such recommendations exist.
  - Train operators in the proper operation of the White-Superior Reciprocating Engines/Compressors and familiarize the operators with the written operating procedures. The permittee shall maintain records of the training provided including the names of trainees, the date of training and the nature of the training.

- The permittee shall maintain records of all emission data and operating parameters necessary to demonstrate compliance with this permit. The content and format of such records shall be arranged with the Director, West Central Regional Office. These records shall include, but are not limited to:
  - The annual throughput of natural gas in million cubic feet for the White-Superior Reciprocating Engine/Compressors. The annual throughput shall be calculated monthly as the sum of each consecutive twelve-(12) month period.

#### Superior 16SGTB Reciprocating Engine/Compressor

- The permittee shall take the following measures in order to minimize the duration and frequency of excess emissions, with respect to the Superior 16SGTB Reciprocating Engine/Compressor:
  - Develop a maintenance schedule and maintain records of all scheduled and non-scheduled maintenance.
  - Maintain an inventory of spare parts that are needed to minimize durations of air pollution control equipment breakdowns.
  - Have available written operating procedures for the Superior 16SGTB Reciprocating Engine/Compressor. These procedures shall be based on the manufacturer's recommendations, at a minimum, if such recommendations exist.
  - Train operators in the proper operation of the Superior 16SGTB Reciprocating Engine/Compressor and familiarize the operators with the written operating procedures. The permittee shall maintain records of the training provided including the names of trainees, the date of training and the nature of the training.
- The permittee shall maintain records of all emission data and operating parameters necessary to demonstrate compliance with this permit. The content and format of such records shall be arranged with the Director, West Central Regional Office. These records shall include, but are not limited to:
  - The annual throughput of natural gas for the Superior 16SGTB Reciprocating Engine/Compressor. The annual throughput shall be calculated monthly as the sum of each consecutive twelve-(12) month period.

#### Waukesha Reciprocating Engine/Generator

- The permittee shall take the following measures in order to minimize the duration and frequency of excess emissions, with respect to the Waukesha Reciprocating Engine/Generator:
  - Develop a maintenance schedule and maintain records of all scheduled and non-scheduled maintenance for the Waukesha Reciprocating Engine/Generator.

- Maintain an inventory of spare parts that are needed to minimize durations of air pollution control equipment breakdowns.
- Train operators in the proper operation of the Waukesha Reciprocating Engine/Generator and familiarize the operators with the written operating procedures. The permittee shall maintain records of the training provided including the names of trainees, the date of training and the nature of the training.
- The permittee shall maintain records of all emission data and operating parameters necessary to demonstrate compliance with this permit. The content and format of such records shall be arranged with the Director, West Central Regional Office. These records shall include, but are not limited to:
  - The annual throughput of natural gas for the Waukesha Reciprocating Engine/Generator. The annual throughput shall be calculated monthly as the sum of each consecutive twelve-(12) month period.
- The number of hours of operation of the Waukesha Reciprocating Engine/Generator.

### **Testing**

The permit does not require source tests. A table of test methods has been included in the permit if testing is performed. The Department and EPA have authority to require testing not included in this permit if necessary to determine compliance with an emission limit or standard.

### **Reporting**

No unit-specific reporting is required. The permittee will submit annual compliance reports for the facility.

### **Streamlined Requirements**

Conditions in the three permits, dated April 22, 1983, September 23, 1993 and July 1, 2001 concerning the following general areas have been streamlined from this Title V permit:

- completed compliance and/or emissions testing
- revocation/modification or reissuance of permit due to substantial process changes, violation of permit terms or change in data upon which permit approval was granted
- change in ownership
- equipment failure or malfunction notifications
- request for prompt response to emission inquiries by DEQ
- copy of permit to be maintained on site

### **GENERAL CONDITIONS**

The permit contains general conditions required by 40 CFR Part 70 and 9 VAC 5-80-110 that applies to all Federal Operating permit sources. These include requirements for submitting semi-annual monitoring reports and an annual compliance certification report. The permit also

requires notification of deviations from permit requirements or any excess emissions.

#### **B. Permit Expiration**

This permit has a fixed term of five years. The expiration date shall be the date five years from the date of issuance. Unless the owner submits a timely and complete application for renewal to the Department consistent with the requirements of 9 VAC 5-80-80, the right of the facility to operate shall be terminated upon permit expiration.

#### **F. Failure/Malfunction Reporting**

Section 9 VAC 5-20-180 requires malfunction and excesses emissions reporting within 4 hours. Section 9 VAC 5-80-250 also requires malfunction reporting; however, reporting is required within 2 days. Section 9 VAC 5-20-180 is from the general regulations. All affected facilities are subject to this section including Title 5 facilities. Section 9 VAC 5-80-250 is from the Title 5 regulations. Title 5 facilities are subject to both Sections. A facility may make a single report that meets the requirements of 9 VAC 5-20-180 and 9 VAC 5-80-250. The report must be made within 4 day time business hours of the malfunction.

#### **J. Permit Modification**

A physical change in, or change in the method of operation of, this stationary source may be subject to permitting under State Regulations 9 VAC 5-80-50, 9 VAC 5-80-1100, 9 VAC 5-80-1790, or 9 VAC 5-80-2000 and may require a permit modification and/or revisions except as may be authorized in any approved alternative operating scenarios.  
(9 VAC 5-80-190 and 9 VAC 5-80-260)

#### **U. Malfunction as an Affirmative Defense**

The regulations contain two reporting requirements for malfunctions that coincide. The reporting requirements are listed in section 9 VAC 5-80-250 and 9 VAC 5-20-180. The malfunction requirements are listed in General Condition U and General Condition F.

In the event that any affected facility or related air pollution control equipment fails or malfunctions in such a manner that may cause excess emissions for more than one hour, the owner shall, as soon as practicable but no later than four daytime business hours after a deviation is discovered from permit requirements, notify the Director, West Central Regional Office, by facsimile transmission, telephone or telegraph of such failure or malfunction and shall within two weeks provide a written statement giving all pertinent facts, including the estimated duration of the breakdown. Owners subject to the requirements of 9 VAC 5-40-50 C and 9 VAC 5-50-50 C are not required to provide the written statement prescribed in this paragraph for facilities subject to the monitoring requirements of 9 VAC 5-40-40 and 9 VAC 5-50-40. When the condition causing the failure or malfunction has been corrected and the equipment is again in operation, the owner shall notify the Director, West Central Regional Office.

### **Asbestos Requirements**

The Virginia Department of Labor and Industry under Section 40.1-51.20 of the Code of Virginia also holds authority to enforce 40 CFR 61 subpart M, National Emission Standards for Asbestos.

### **STATE ONLY APPLICABLE REQUIREMENTS**

The following Virginia Administrative Codes have specific requirements only enforceable by the State and have been identified as applicable by the applicant:

9 VAC 5-50-320 Toxic Pollutants as follows:

- The Superior 16SGTB Reciprocating Engine/Compressor shall consume no more than 212 MMSCF of natural gas per year, calculated monthly as the sum of each consecutive twelve (12) month period.
- Emissions from the operation of the Superior 16SGTB Reciprocating Engine/Compressor shall not exceed the limits specified below:

Formaldehyde	1.0 lbs/hr	4.4 tons/yr
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- The permittee shall maintain records of the yearly throughput of natural gas to the Superior 16SGTB Reciprocating Engine/Compressor, calculated monthly as the sum of each consecutive 12-month period.

### **FUTURE APPLICABLE REQUIREMENTS**

The Reciprocating Internal Combustion Engine (RICE) MACT, Subpart ZZZZ was signed on February 26, 2004 but is not yet final. Upon promulgation this MACT will not be applicable to this facility for the following reasons:

- the potential HAPs emissions from this facility is less than 10/25 tons (potential 9.47 tons formaldehyde)
- the 3 large reciprocating engines are 4 stroke lean burn (4SLB) - these types of engines do not have an applicable emission or operating limitation in the MACT (see §63.6600 - Emission and Operating Limitations)
- the smaller reciprocating engine is a 2 stroke rich burn (2SRB) but is under 500 hp, therefore none of the emission or operating limitations would apply

### **INAPPLICABLE REQUIREMENTS**

NSPS Subpart GG for gas turbines is not applicable.

CAM is not applicable since there is no add-on control equipment.

## COMPLIANCE PLAN

This facility is not under a compliance plan.

## INSIGNIFICANT EMISSION UNITS

The insignificant emission units are presumed to be in compliance with all requirements of the Clean Air Act as may apply. Based on this presumption, no monitoring, recordkeeping or reporting shall be required for these emission units in accordance with 9 VAC 5-80-110.

Insignificant emission units include the following:

Emission Unit No.	Emission Unit Description	Citation	Pollutant(s) Emitted	Rated Capacity
012A1	Waukesha n. gas air compressor	9 VAC 5-80-720 C	NOx, CO, VOC	25 hp
BLR1	Boiler #1, n. gas	9 VAC 5-80-720 C	NOx, CO, VOC	1.95 MMBtu/hr
BLR3	Boiler #3, n. gas	9 VAC 5-80-720 C	NOx, CO, VOC	0.85 MMBtu/hr
HTR1	n. gas line heater #1	9 VAC 5-80-720 C	NOx, CO, VOC	2.0 MMBtu./hr
HTR2	n. gas line heater #2	9 VAC 5-80-720 C	NOx, CO, VOC	0.45 MMBtu/hr
A06	lube oil tank	9 VAC 5-80-720 B	VOC	120 gallons
A10	used oil tank	9 VAC 5-80-720 B	VOC	550 gallons
A11	pipeline liquids tank	9 VAC 5-80-720 B	VOC	1,000 gallons
A12	used glycol tank	9 VAC 5-80-720 B	VOC	1,200 gallons
A14	glycol tank	9 VAC 5-80-720 B	VOC	1,200 gallons
A15	lube oil tank	9 VAC 5-80-720 B	VOC	550 gallons
FUG	fugitive emissions (equipment leaks and blowdowns)	9 VAC 5-80-720 B	VOC	n/a

<sup>1</sup>The citation criteria for insignificant activities are as follows:

- 9 VAC 5-80-720 A - Listed Insignificant Activity, Not Included in Permit Application
- 9 VAC 5-80-720 B - Insignificant due to emission levels
- 9 VAC 5-80-720 C - Insignificant due to size or production rate

## CONFIDENTIAL INFORMATION

The permit application contained no confidential information.

## PUBLIC PARTICIPATION

The draft/proposed permit will be placed on public notice in the Roanoke Times from March 30, 2004 to April 29, 2004 . During this time, no comments were received.

This permit was advertised for *concurrent review* with the 45-day comment period for EPA expiring on May 14, 2004. No comments were received from EPA.